PERMIT APPLICATION REVIEW
TEMPORARY COVERED SOURCE PERMIT NO. 0833-01-CT
Application for Initial Permit No. 0833-01

Company:	E.M. Rivera & Sons, Inc.
Mailing Address:	P.O. Box 9031 Kailua-Kona, Hawaii 96745
Facility:	Stone Crushing
Location:	Various Temporary Sites, State of Hawaii
Initial Location:	**74-592C Hale Makai Pl.,** **Kailua-Kona, Hawaii** **UTM Coordinates: ZONE 4, 813,804 m East – 2,176,793 m North (NAD-83)**
SIC Code:	1442 (Stone Crushing and Screening, Not Elsewhere Classified)
Responsible Official:	Mr. Hiram Rivera President (808) 325-5057
Contact:	Mr. Fred Peyer CFM Environmental 95-109 Waikalani Drive Mililani, Hawaii 96789 (808) 779-2948

Proposed Project

E.M. Rivera & Sons Inc. has submitted an application to operate a 287 TPH Terex/Finlay mobile Cone Crusher model C-1540RS, Serial no. 65195-E plant to process raw material consisting of basalt rock or concrete.

The 287 TPH Cone Crusher plant, crush, and separate crushed material using high frequency double deck sizing screen filters. It has three (3) removable conveyors. It is using a self-cleaning permanent magnet to remove metallic particles, and a spray bar with spray heads installed above the main conveyor belt for particulate control.

The crusher is track mounted, and powered by a 331 kW (443 hp) diesel engine. The diesel engine is exempt since it is non-road and propels the crusher.

AIR POLLUTION CONTROLS

The crusher features a built-in dust suppression system consisting of spray bars with atomizer nozzles. Water trucks/water sprays will be used as necessary to minimize fugitive dust from plant operations, material transfer points, stockpiles, and plant roads.

Equipment Description

Unit	Description	Manufacturer	Model	Serial No.	Date Mafct	NOTE	Capa-city	HP
1	Cone Crusher	Terex/Finlay	C-1054RS	65195-E	2015	On Tracks	287 TPH	
1	Exempt Diesel Engine	Scania	DC1383A00	6716501	2015	Propels Crusher	331 kW	443

APPLICABLE REQUIREMENTS

Hawaii Administrative Rules (HAR)
Title 11 Chapter 59, Ambient Air Quality Standards
Title 11 Chapter 60.1, Air Pollution Control
- Subchapter 1, General Requirements
- Subchapter 2, General Prohibitions
  - 11-60.1-31, Applicability
  - 11-60.1-32, Visible Emissions
  - 11-60.1-33, Fugitive Dust
- Subchapter 5, Covered Sources
- Subchapter 6, Fees for Covered Sources, Noncovered Sources, and Agricultural Burning
  - 11-60.1-111, Definitions
  - 11-60.1-112, General Fee Provisions for Covered sources
  - 11-60.1-113, Application Fees for Covered sources
  - 11-60.1-114, Annual Fees for Covered sources
  - 11-60.1-115, Basis of Annual Fees for Covered Sources
- Subchapter 8, Standards of Performance for Stationary Sources
  - 11-60.1-161, New Source Performance Standards
- Subchapter 9, Hazardous Air Pollutant Sources
- Subchapter 10, Field Citations

Air Emissions Reporting Requirements (AERR), 40 CFR Part 51
Subpart A - **AERR** is not applicable because emissions from the facility do not exceed AERR triggering levels.

A **Best Available Control Technology (BACT)** – This source is not subject to BACT analysis because potential to emit emission for PM and PM-10 does not exceed the BACT trigger levels as defined in HAR, Section 11-60.1-1.

Prevention of Significant Deterioration (PSD) - 40 CFR Part 52, §52.21
This plant is not subject to PSD because it is not a major stationary source. It is not one of the twenty-eight (28) sources in the 40 CFR §52.21 and HAR, Title 11, Chapter 60.1, Subchapter 7, under source list (§11-60.1-131) and the plant's PM emissions do not exceed 250 tons per year.

Total Facility Emissions and Trigger Levels (TPY) for 287 TPH Crusher

Pollutant	Crusher	Crusher[a]	BACT Significant Levels	AERR Thresholds	DOH Levels	Wind Erosion	Vehicle Travel on Unpaved Road
CO	0	**0.00**	100	1000	250	0	0
NO_X	0	**0.00**	40	100	25	0	0
SO_2	0	**0.00**	40	100	25	0	0
PM-2.5	**0.36**	**0.83**	10	100	.	**0.00**	**0.46**
PM-10	**2.92**	**7.57**	15	100	25	**0.02**	**4.63**
PM	**8.03**	**27.01**	25	.	25	**0.04**	**18.94**
VOC	0	**0.00**	40	100	25	0	0
HAPs	0	**0.00**	.	.5 (Actual Lead)	5	0	0

[a]Data include emissions from wind erosion and unpaved road travel

Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60
Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants is applicable to the crushing plant because the maximum capacity of the crusher is greater than 150 tons/hour, and plant was manufactured after August 31, 1983 (§60.671). It is also subject to 40 CFR Part 60, §60.674 which stated that plants manufactured after 22 April 2008 using wet suppression system to control emissions must perform monthly periodic inspections to check that water is flowing to the nozzles properly. A corrective action within twenty-four (24) hours and log book entry are mandatory.

Standard of Performance for New Stationary Sources (NSPS), 40 CFR Part 60
Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (ICE) is not applicable to this diesel engine, because it is considered nonroad engine as defined in 40 CFR §1068.30. Subpart IIII applies to stationary internal combustion engines that are not nonroad engines.

National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61
This source is not subject to NESHAP as there are no standards in 40 CFR Part 61 applicable to this facility.

NESHAPs for Source Categories, 40 CFR Part 63 (section 112 of the Act)
Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) is not applicable because the diesel engine is considered a nonroad engine as defined in 40 CFR §1068.30. Subpart ZZZZ applies to stationary internal combustion engines that are not nonroad engines.

Compliance Assurance Monitoring (CAM) - 40 CFR Part 64
This plant not subject to CAM because the facility is not a major source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. Pursuant to 40 CFR Part 64, for CAM to be applicable, the emissions unit must:

(1) Be located at a major source
(2) Be subject to an emissions limit or standard
(3) Use a control device to achieve compliance
(4) Have potential pre-control emissions that are 100% of the major source level
(5) Not otherwise be exempt from CAM.

DOH In-house Annual Emissions Reporting
The Clean Air Branch requests annual emissions reporting from those facilities that have facility wide emissions exceeding in-house reporting levels and for all covered sources. Annual emissions reporting is required since it is a covered source and PM emission do exceed in-house reporting levels.

Synthetic Minor Source
A synthetic minor source is a facility that is potentially major, as defined in HAR, §11-60.1-1, but is made non-major through federally enforceable permit conditions. This facility is not a synthetic minor source because potential emissions do not exceed major source thresholds (100 TPY) when the facility is operated without limitations for 8,760 hours/year.

EXEMPTIONS

The 331 kW diesel engine powering the 287 TPH crusher is exempt in accordance with HAR §11-60.1-62(d)(21) because the engine is use to propel the crusher.

ALTERNATIVE OPERATING SCENARIOS

None proposed. The engine on the crusher is exempt since it propels the crusher.

PROJECT EMISSIONS

287 TPH Cone Crushing Plant

The maximum capacity of the crusher were used to calculate emissions. Water sprays will be used to control PM emissions. Emissions were based on emission factors from AP-42 Section 11.19.2 (8/04) – Crushed Stone Processing and Pulverized Mineral Processing.

Project Emissions 287 TPH Crusher	
Pollutant	**Emissions (TPY) [8760 hr/yr]**
PM-2.5	0.83
PM-10	2.92
PM	8.03

Wind Erosion Emissions

Storage pile emissions were based on emission factors from AP-42 (4th Edition) Table 8.19.1-Uncontrolled Particulate Emission Factors for Sand and Gravel Processing Plants.

Wind Erosion from Storage Piles

AP-42 Section 8.19.1 (4th ed.) - Sand and Gravel Processing

Emissions (ton/yr) = Area of Storage Piles (acre) x # Days Storage Piles Exist (day/year) x Emission Factor (lb/acre/day) x ton/2000 lb

	Value	Unit	Notes
Area of Storage Piles	0.2	acre	
# Days Storage Piles Exist	365	day/year	

Pollutant	EF (lb/ton)	Control Efficiency	Emissions (TPY)	
			8,760 hr/yr	8,760 hr/yr
PM	3.5	70%	0.04	**0.04**
PM-10	1.7	70%	0.02	**0.02**
PM-2.5	0.2625	70%	0.00	**0.00**

notes:
1. EFs from AP-42 Table 8.19.1-1; PM-2.5 = 7.5% of PM (AP-42 Sec. 13.2.5 (11/06))

Vehicle Travel on Unpaved Roads

AP-42 Section 13.2.2 (11/06) - Unpaved Roads
Emissions (lb/hr) = Vehicle Miles Traveled (VMT/hr) x Emission Factor (lb/VMT)

Vehicle Miles Traveled (VMT)

	Value	Unit	Notes
Hour Limit	**8760**	hour/year	
Processing Capacity	**287**	TPH	Cone Crusher
Vehicle Load Capacity	**21**	ton	
Travel Distance Roundtrip	**0.25**	mile	
Average VMT/hour	**3.42**	VMT/hour	Processing Capacity / Load x Distance
Total VMT	**29930**	VMT/year	VMT/hour x Hour Limit

For vehicles traveling on unpaved surfaces at industrial sites:

$EF = k(s/12)^a(W/3)^b$

where:

EF = size-specific emission factor (lb/VMT)
s = surface material silt content (%)
W = mean vehicle weight (tons)
k,a,b = empirical constants

$EFext = EF[(365-P)/365]$

where: Eext = annual size-specific emission factor extrapolated for natural mitigation (lb/VMT)

	Value	Unit	Notes

	PM-2.5	PM-10	PM		
k	0.15	1.5	4.9	lb/VMT	AP-42 Table 13.2.2-2
a	0.9	0.9	0.7	-	AP-42 Table 13.2.2-2
b	0.45	0.45	0.45	-	AP-42 Table 13.2.2-2
s	3.9			%	AP-42 Sec. 13.2.2 - Related Information
W	26.5			ton	avg tare weight=16 ton, gross weight=37 ton
P	106			day	Station 514764(Kona-Airport)(www.wrcc.dri.edu)

Pollutant	EF (lb/VMT)	EFext (lb/VMT)	Control Efficiency	Emissions (lb/hr)	Emissions (TPY)	
					8,760 hr/yr	8,760 hr/yr
PM	5.95	4.22	70%	4.33	18.94	**18.94**
PM-10	1.45	1.03	70%	1.06	4.63	**4.63**
PM-2.5	0.15	0.10	70%	0.11	0.46	**0.46**

Notes:
- 70% control efficiency was assumed for water suppression (AP-42 Sec. 11.19.1.2(11/95))

Total facility emissions:

Pollutant	Crusher	Plant Total[a]	Wind Erosion	Unpaved Road Travel
CO	**0**	**0**	**0**	**0**
NO_X	**0**	**0**	**0**	**0**
SO_2	**0**	**0**	**0**	**0**
PM-2.5	**0.36**	**0.83**	**0.00**	**0.46**
PM-10	**2.92**	**7.57**	**0.02**	**4.63**
PM	**8.03**	**27.01**	**0.04**	**18.94**
VOC	**0**	**0**	**0**	**0**
HAPs	**0**	**0**	**0**	**0**

[a]Data include emissions from wind erosion and unpaved road travel

Stone Quarrying and Processing Plant

AP-42 Section 11.19.2 (8/04) - Crushed Stone Processing and Pulverized Mineral Processing
Emissions (lb/hr) = Processing Capacity (ton/hr) x Emission Factor (lb/ton)

	Value	Unit	Notes
Hour Limit	**8760**	hour/year	
Processing Capacity	**287**	TPH	
Conveyor Transfer Points	**4**	-	

PM	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				8,760 hr/yr	8,760 hr/yr
Truck Unloading	287	3.14E-05	0.01	0.04	0.04
Cone Crusher	287	1.20E-03	0.34	1.51	1.51
Screen	287	2.20E-03	0.63	2.77	2.77
Screen	287	2.20E-03	0.63	2.77	2.77
Conveyor Transfer Points (4x)	287	1.40E-04	0.16	0.70	0.70
Truck Loading	287	1.96E-04	0.06	0.25	0.25
Total PM			1.83	8.0	**8.03**

PM-10	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				8,760 hr/yr	8,760 hr/yr
Truck Unloading	287	1.60E-05	0.00	0.02	0.02
Cone Crusher	287	5.40E-04	0.15	0.68	0.68
Screen	287	7.40E-04	0.21	0.93	0.93
Screen	287	7.40E-04	0.21	0.93	0.93
Conveyor Transfer Points (4x)	287	4.60E-05	0.05	0.23	0.23
Truck Loading	287	1.00E-04	0.03	0.13	0.13
Total PM-10			0.67	2.9	**2.92**

PM-2.5	Capacity (ton/hour)	EF (lb/ton)	Emissions (lb/hr)	Emissions (TPY)	
				8,760	8,760

				hr/yr	hr/yr
Truck Unloading	287	4.71E-06	0.00	0.01	0.01
Cone Crusher	287	1.00E-04	0.03	0.13	0.13
Screen	287	5.00E-05	0.01	0.06	0.06
Screen	287	5.00E-05	0.01	0.06	0.06
Conveyor Transfer Points (4x)	287	1.30E-05	0.01	0.07	0.07
Truck Loading	287	2.94E-05	0.01	0.04	0.04
Total PM-2.5			0.08	0.4	**0.36**

notes:
1. EFs (controlled) from AP-42 Table 11.19.2-2
2. Assume PM-10 = 51% of PM and PM-2.5 = 15% of PM when no data available (AP-42 Appendix B.2 (1/95))

AIR QUALITY ASSESSMENT

An ambient air quality impact analysis (AAQIA) is generally required for new or modified sources to demonstrate compliance with State and National ambient air quality standards.

An ambient air quality impact analysis (AAQIA) is not required for the proposed crusher plant because emissions are fugitive in nature. The Department of Health air modeling guidance generally does not require an ambient air quality impact analysis for fugitive emissions.

CONCLUSION

E.M. Rivera & Sons, Inc. has submitted an application for a temporary covered source permit to operate without limitations. E.M. Rivera & Sons, Inc. is proposing to operate a 287 TPH Terex/Finlay, Track Mounted, Cone Crusher powered by a Scania 331 kW (443 hp) diesel engine. The diesel engine is not included in the permit since it propels the crusher, and is exempt pursuant to HAR §11-60.1-82(d)(4), which exempts internal combustion engines propelling mobile sources. Potential emissions were based on the maximum rated capacities of the equipment.

Recommend issuance of the covered source permit subject to the incorporation of the permit conditions.

Jensen I. Kennedy
October 21, 2015